AMENDMENTS TO THE CLAIMS

In the Claims:

What is claimed is:

1. A system for *in-situ* regulation of an etch process employed in fabricating a multi-sloped semiconductor feature on a wafer, comprising:

one or more etching components operative to etch at least one aspect of a multi-sloped feature on a wafer;

an etch component controller for controlling the one or more etching components;

a system for directing light onto the wafer;

a measuring system for measuring at least one etching parameter based on light reflected from the wafer; and

a process analyzer operatively coupled to the measuring system and the etch component controller, wherein the process analyzer receives the measured parameters from the measuring system and analyzes the measured parameters to determine whether adjustments to the etching components are needed to fabricate the multi-sloped features within desired critical dimension tolerances and where the process analyzer stores the measured parameters to facilitate reproducing process conditions.

2. The system of claim 1, the measuring system further including a scatterometry system for collecting the reflected light, wherein the measuring system interprets the reflected light to produce the measured etch parameters using scatterometry techniques.

3. The system of claim 2, wherein the measured etch parameters include at least one of feature height, feature width, slope of one or more feature sides and angles between feature sides.

4. The system of claim 3, wherein the multi-sloped feature has one or more angles between feature sides that are not right angles.

5. The system of claim 2, wherein the process analyzer:

partitions the wafer into a plurality of grid blocks; and

determines whether to make adjustments to one or more etching components associated with one or more grid blocks by analyzing measured etch parameters corresponding to one or more grid blocks.

6. The system of claim 5, wherein the process analyzer determines that adjustments to one or more etching components are necessary for at feast a portion of the wafer by comparing one or more measured etch parameter values to one or more stored acceptable etch parameter values.

7. The system of claim 6, wherein the stored acceptable etch parameter values are stored as scatterometry signatures.

8. A method for *in-situ* regulation of a process for etching a multi-sloped semiconductor device formed on a wafer, comprising:

partitioning the wafer into one or more portions;

etching at least one multi-sloped device on at least one portion of the wafer;

directing light onto at least one portion of the wafer;

collecting light reflected from the at least one portion;

analyzing the reflected light to determine the acceptability of the multi-sloped semiconductor device on the at least one portion;

storing data associated with the acceptability of the multi-sloped semiconductor device and one or more processing conditions associated with creating the multi-sloped semiconductor device to facilitate reproducing the one or more processing conditions; and

selectively controlling one or more etching components to regulate the etching of the multi-sloped semiconductor device on the at least one portion.

9. The method of claim 8, wherein the light is collected by a scatterometry measuring system.

10. The method of claim 9, wherein the scatterometry measuring system interprets the reflected light into measured etch parameters associated with the at least one portion using scatterometry techniques.

11. The method of claim 10, wherein the measured etch parameters are compared to stored acceptable etch parameter values in order to determine whether one or more adjustments to the process for etching a multi-sloped semiconductor device formed on a wafer is necessary.

12. A method for *in-situ* regulation of an etch process of a multi-sloped semiconductor device formed on a wafer, comprising:

partitioning the wafer into a plurality of grid blocks;

using one or more etching components to etch a multi-sloped semiconductor feature on the wafer, each etching component functionally corresponding to a respective grid block;

measuring at least one etch parameter associated with the multi-sloped semiconductor feature;

determining etching conditions at the at least one grid block according to the measured etch parameter; and

using a process analyzer to selectively control the plurality of etching components to compensate for wafer to wafer variations during the etch process of the multi-sloped feature.

13. A system for *in-situ* regulation of an etch process of a multi-sloped semiconductor device formed on a wafer, comprising:

means for partitioning the wafer into a plurality of portions;

means for etching at least one multi-sloped device on at least one portion of the wafer;

means for directing light onto at least one portion of the wafer;

means for collecting light reflected from the at least one portion;

means for analyzing the reflected light to determine the acceptability of the etching of the at least one portion; and

means for selectively controlling one or snore etching components to regulate the etching of the multi-sloped semiconductor device on the at least one portion.

14. A data packet adapted to be transmitted between two or more processes, the data packet containing information related to *in-situ* adaptation of an etch process employed in fabricating a multi-sloped semiconductor device, where the information was generated by a system for *in-situ* regulation of an etch process employed in fabricating a multi-sloped semiconductor feature on a wafer, the system comprising:

one or more etching components operative to etch at least one aspect of a multi-sloped feature on a wafer;

an etch component controller for controlling the one or more etching components;

a system for directing light onto the wafer;

a measuring system for measuring at least one etching parameter based on light reflected from the wafer; and

a process analyzer operatively coupled to the measuring system and the etch component controller, wherein the process analyzer receives the measured parameters from the measuring system and analyzes the measured parameters to determine whether adjustments to the etching components are needed to fabricate the multi-sloped features within desired critical dimension tolerances and where the process analyzer stores the measured parameters to facilitate reproducing process conditions.

15. A method employed for manufacturing semiconductor devices, comprising:

determining a desired multi-sloped profile;

etching at least one device to conform to the desired multi-sloped profile;

detecting *in situ* parameters of the etching of the device utilizing scatterometry; and

adjusting the etching of the multi-sloped profile as necessary to produce the desired multi-sloped profile.

16. The method of claim 15, further including storing the desired multi-sloped profile.

17. The method of claim 15, further including analyzing the parameters of the etching of the device.

18. The method of claim 17, wherein analyzing includes comparing current parameters to previous parameters.

19. The method of claim 15, further including storing the parameters found while detecting *in situ* parameters.

20. The method of claim 15, wherein adjusting the etching of the multi-sloped profile includes at least one from a group consisting of reducing a rate of etching and increasing a rate of etching.

21. The method of claim 15, further including controlling light sources utilized in detecting *in situ* parameters.

22. The method of claim 21, wherein controlling light sources includes at least one from a group consisting of reducing a light source intensity, increasing a light source intensity and altering an angle of a light source.

23. The method of claim 15, further including controlling light receivers utilized in detecting *in situ* parameters.

24. The method of claim 23, wherein controlling light receivers includes at least one from a group consisting of reducing a light receiver sensitivity, increasing a light receiver sensitivity and altering an angle of a light receiver.

25. A semiconductor device manufacturing system, comprising:

at least one etch component for etching a device to conform to a desired multi-sloped profile;

a detecting system employing scatterometry for detecting *in situ* parameters related to the etching of the device; and

an etch component controller capable of receiving information from the detecting system to control the etch component as necessary to produce the desired multi-sloped profile.

26. The system of claim 25, further comprising an analysis system to analyze *in situ* parameters provided by the detecting system.

27. The system of claim 26, the analysis system additionally analyzes *in situ* parameters based on at least one from a group consisting of current *in situ* parameters, previous *in situ* parameters, scatterometry signature profiles, and predetermined multi-sloped profiles.

28. The system of claim 25, further comprising a storage medium for storing at least one from a group consisting of current *in situ* parameters, previous *in situ* parameters, scatterometry signature profiles, and predetermined multi-sloped profiles.

29. A system for manufacturing semiconductor devices, comprising:

means for etching at least one device to conform to a desired multi-sloped profile;

means for detecting *in situ* parameters of the etching of the device utilizing scatterometry; and

means for adjusting the etching of the multi-sloped profile as necessary to produce the desired multi-sloped profile.

30. A data packet transmitted between two or more components that facilitates semiconductor device manufacture, the data packet comprising information, based, in part, on a scatterometry derived means for producing multi-sloped profiled devices.